

REMARKS/ARGUMENTS

This letter is responsive to the Office Action dated **October 21, 2003**.

35 USC 112

The Examiner rejects Claims 3–8, 23, 24, 25, and 27 under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Applicant has amended the Claims to clarify the invention. The Applicant submits that the amendments to the claims are fully supported from the specification and figures of the patent application as filed, and do not add any new subject matter to the application.

The Examiner rejects Claim 3 as being redundant, as its limitations are already included in amended Claim 1.

Applicant has amended Claim 3 to clarify that the mixed liquor to be passed through the screen is removed from the wastewater treatment system downstream of where the screened mixed liquor is flowed back to the wastewater treatment system. Applicant submits that this amendment provides the additional limitation of relative positions between the mixed liquor that is passed through the screen and the screened mixed liquor that is flowed back to the wastewater treatment system. Support for this amendment can be found at page 5, lines 4–7 of the specification and Figure 1. Accordingly, Applicant submits that amended Claim 3 is not redundant in light of Claim 1.

The Examiner rejects Claim 4 as being redundant and unclear as to what is intended, since screening and recycling back to the wastewater treatment system is claimed in amended Claim 1.

Applicant has amended Claim 4 to clarify that the waste water treatment system further includes a recycle mixed liquor stream that is withdrawn from a downstream part of the waste water treatment system and recycled to an upstream part of the waste water treatment system. Support for this amendment can be found at page 4, lines 20–21 of the specification and Figure 1. As Claim 4 further includes the recycle mixed liquor stream over the steps of Claim 1, Applicant submits that amended Claim 4 is not redundant in light of Claim 1.

The Examiner rejects Claim 5 for including the unclear term "flowed back to the recycled mixed liquor stream," since screening and recycling back to the process is claimed in claim 1, recycling back the screened liquors to the mixed liquor contradicts the limitation of claim 1 which recycles the screened liquor back to the initial process.

Claim 5 depends from amended Claim 4. As explained above, Applicant has amended Claim 4 to clarify that the wastewater treatment system further includes a recycle mixed liquor stream over the steps in Claim 1. Claim 5 specifies that the screened mixed liquor is flowed back to the recycle mixed liquor stream (which forms a part of the waste water treatment system). Accordingly, Applicant submits that Claim 5 is not unclear in light of Claim 1 and amended Claim 4.

The Examiner rejects Claims 7 and 8 as being unclear as to whether the mixed liquor and the sludge constitute the same streams in the process (e.g., stream 26 of the figure or retentate from the membrane).

Applicant has amended Claim 7 to clarify that the waste water treatment system produces a waste sludge which is removed from the waste water treatment system through a waste sludge stream. Applicant has also amended Claim 8 to specify that the screenings produced from screening the mixed liquor are flowed to the waste sludge stream. Support for these amendments can be found at page 4, lines 18–21 of the specification and Figure 1. Accordingly, Applicant submits that amended Claims 7 and 8 are clear.

The Examiner rejects Claims 23–27 as including the limitations of Claims 4–8 as discussed above, and are therefore also unclear.

Applicant has amended Claims 23, 26 and 27 to correspond to the amendments made in Claims 4, 7 and 8, respectively. Claim 24 depends from amended Claim 23, and therefore also benefits from the amendments made to Claim 23. Accordingly, Applicant submits that amended Claims 23–27 are clear.

35 USC 103

The Examiner rejects Claims 1–9, 11–15, 21–28, 30–34, 36–39 under 35 U.S.C., 103(a) as being unpatentable over Miller et al. (U. S. Patent No. 5,575,213, hereinafter Miller et al.).

The Examiner provides the following at paragraph 6 of the Office Action:

...Miller et al. teaches... "recirculation of concentrate" from the dynamic membrane treatment back to the process, which suggests returning the concentrate to feed inlet of the process, and therefore includes screening of the concentrate re-entering the process (col. 8, lines 47–64)... Applicants argue that the screen filter in Miller is located in the feed stream, and in the present invention the screen is located in the mixed liquor stream. By recirculating the mixed liquor back to the feed inlet, the mixed liquor stream will also be screened, the effect of screening the concentrate prior to the membrane filtration, is intended for the same purpose of removing concentrated solids in the mixed liquor stream, which avoids membrane clogging, as it does in the prefiltration of the feed waste stream, therefore, one skilled in the ordinary art would have been motivated to treat the concentrate (mixed liquor) before the membrane treatment for the same purpose. Furthermore, treatment of concentrate before recirculation back to a membrane process to remove solids and avoid membrane clogging is conventional in the art, e.g. by precipitation, microfiltration, or screen, and is disclosed in the prior art of record."

The Examiner's argument rests on the assumption that the general reference in Miller et al. to recirculate concentrate from the dynamic membrane assembly back to the process provides the requisite 'suggestion or motivation to modify Miller et al.' to return the concentrate back to the feed inlet of the process. The Applicant submits that merely referring to recirculation of the concentrate from the dynamic membrane assembly back to the process in passing, without any further discussion, does not provide the requisite 'suggestion or motivation to modify Miller et al.' necessary to establish a *prima facie* case of obviousness.

In particular, applicant submits that Miller et al. teaches away from Applicant's invention, which is the antithesis of the art's suggesting that the person of ordinary skill go in the claimed direction. Applicant notes that Miller et al. provides the following at column 8, lines 47–60:

While the concentrate from the dynamic filtration assembly is ultimately passed by way of a suitable fluid pathway into a suitable concentrate tank, this can be accomplished after the concentrate is recycled for further concentration. Since the dynamic filtration process is improved by higher fluid velocities which tend to reduce the filter medium fouling rate, it is preferred that the dynamic filtration assembly utilize a recirculation pump to take suction from the outlet end of the dynamic filtration assembly and discharge it into the inlet end of the dynamic filtration assembly. Recirculation rates of between one and ten times the outlet flow rate are preferred, with higher recirculation flow rates being most preferred in treating heavily contaminated fluids. (Emphasis Added).

As shown in the passage above, Miller et al. has higher fluid velocities in the dynamic filtration process and discloses recirculating the concentrate from the dynamic membrane assembly with a recirculation pump from the outlet end of the dynamic filtration assembly to the inlet end of the dynamic filtration assembly. Additionally, there is no explicit or implicit suggestion or motivation in Miller et al.

or in the knowledge generally available to one of ordinary skill in the art to modify Miller et al. to arrive at the claimed invention, as now shown in amended claims 1 and 21, that now positively state that for the process claimed the average flow rate of the mixed liquor passing through the screen is not more than about 1.0 of the average design flow rate of the waste water treatment system. Accordingly, Applicant submits that Claims 1 and 21 are patentable over Miller et al.

Claims 2–9 and 11–15 depend from Claim 1, and Claims 22–28, 30–34, 36–39 depend from Claim 21. Accordingly, Applicant submits that Claims 2–9, 11–15, 22–29, 30–34 and 36–39 are allowable at least for the reasons given for Claims 1 and 21.

The Examiner rejects Claims 16–17, 20, 35 under 35 U.S.C. 103(a) as being unpatentable over Miller et al. in view of Fox et al. (U. S. Patent No. 6,675,377, hereinafter Fox et al.). Specifically, the Examiner argues that Miller et al. teaches all of the limitations of Claim 1. The Examiner further argues that Fox et al. teaches all of the limitations in Claims 16–17.

Claims 16–17 include all of the elements recited in Claim 1. As explained above, Miller et al. does not teach or suggest all of the elements of Claim 1. Accordingly, the Applicants submit that Miller et al. and Fox et al. would not provide all of the elements of Claims 16–17, even if those references were combined. Moreover, as Applicant has argued above, since Miller et al. teaches away from the invention, there is no motivation to combine Miller et al. with Fox et al. to arrive at the invention as claimed in claims 16–17.

The Examiner rejects Claim 10 under 35 U.S.C. 103(a) as being unpatentable over Miller et al. in view of Coyne (U. S. Patent No. 5,637,221, hereinafter Coyne). Specifically, the Examiner argues that Miller et al. teaches all of the

limitations of Claim 1. The Examiner further argues that Coyne teaches the limitation in Claim 10.


Claim 10 includes all of the elements recited in Claim 1. As explained above, Miller et al. does not teach or suggest all of the elements of Claim 1. Accordingly, the Applicants submit that Miller et al. and Coyne would not provide all of the elements of Claim 10, even if those references were combined. Moreover, as Applicant has argued above, since Miller et al. teaches away from the invention, there is no motivation to combine Miller et al. with Coyne to arrive at the invention as claimed in claims 10.

In view of the foregoing, a timely notice of allowance is respectfully requested. Should the Examiner deem it beneficial to discuss the application in greater detail, she is kindly requested to contact the undersigned by telephone at (416) 957-1697 at her convenience.

Respectfully submitted,

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